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AN ANALYSIS OF THE PRICES RECEIVED FOR CANNED CLINGSTONE PEACHES BY CANNERS IN CALIFORNIA -- SEASONS, 1924-25 THROUGH 1935-36

by

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H. J. Stover[1]

This report presents the results of an analysis which has been made for the purpose of determining the more important factors which have been responsible for the variations in the annual average f.o.b. prices received for canned clingstone peaches by canners in California from 1924-25 through 1935-36, and of measuring the influence of each of these factors upon those prices.

Users of this report should clearly recognize the fact that the results presented herein are based entirely upon what happened during the seasons included in the analysis. They do not forecast what will happen in the future. They are designed to serve as a helpful guide in estimating either the probable price at which a given quantity of canned peaches can be sold or the probable quantity that can be sold at a given price, under given conditions. In making such estimates, it is first necessary to determine the probable future positions of the factors which have affected canned-clingstone-peach prices in the past.

Pack, Carryover, Shipments, and Prices of Canned Peaches in California.-- The pack of canned peaches (clingstones and freestones) in California in 1935 amounted to 11,216,000 cases, on a 2½-can basis (table 1). The carryover from the preceding season was 1,856,000 cases, which, added to the pack figure, gave a total supply of 13,072,000 cases available for shipment during the 1935-36 season. Shipments between June 1, 1935 and June 1, 1936 amounted to 11,030,000 cases, leaving a carryover into the 1936-37 season of 2,042,000 cases. The average f.o.b. price received by canners for canned clingstone peaches shipped during the 1935-36 season was, according to the reports received, $2.54 per case.

Data on packs, carryovers, shipments, and prices of canned peaches for the past twelve seasons, comparable to those given above, are presented in table 1.

Relation Between the F.O.B. Prices and Shipments of Canned Peaches.-- One of the more important factors affecting the price at which a product has been sold is the quantity of the product sold at that price. Other factors remaining the same, the larger the quantity sold, the lower must the price be in order to find sufficient buyers for the product. Conversely, the smaller the quantity sold, the higher will be the price.

In figure 1 the f.o.b. prices received by canners given in column 6 of table 1 are plotted against the shipments of canned peaches given in column 4 of table 1. The average net relationship between these two factors (meaning the relationship which would be expected after relationships with other factors have been taken into account) is indicated by the curve in this chart. Comparisons of the actual f.o.b. prices of canned clingstone peaches with the prices estimated from this curve are made in table 2. The portion of the variation in the actual prices which has not been accounted for by the relationship expressed in figure 1 is given in column 4 of table 2.

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A comparison of the prices of canned clingstone peaches estimated from shipments of canned peaches with the actual prices is shown graphically in figure 2.

Influence of the Levels of Consumer Incomes upon Canned-Clingstone-Peach Prices.-- During recent years, the dominant factor affecting the prices of most products has been the status of general demand conditions. One of the best available indicators of these conditions is an index of national income, excluding agricultural income, compiled and published by the Bureau of Agricultural Economics of the United States Department of Agriculture. The monthly figures for this index from June, 1924 to date are given in table 3 and presented graphically in figure 3.

Logically the net effect of a change in the levels of consumer incomes upon the price of a product is directly proportional to the change in incomes. For example, if, during a period when consumer incomes were at levels referred to as 100 per cent, a given quantity of a product sold at a price of $4.00 per unit, one would expect that with the levels of incomes at 70 per cent the same quantity would sell at a price of $2.80 (70 per cent of $4.00) per unit. Departures from this figure would be due to the influence of other factors, some of which might be closely related to changes in the levels of consumer incomes. For instance, if the 70 per cent levels of consumer incomes referred to above followed levels of 60 per cent, the effect would probably differ considerably from that resulting if the 70 per cent levels followed levels of 80 per cent. The direction of the change in consumer incomes would, in that case, be an additional but distinct factor.

The influence of changes in the levels of consumer incomes upon the prices of canned clingstone peaches in California is taken into account in the computations given in table 4. In 1934-35, for example, the index of national income, excluding agricultural income, amounted to 72 per cent of the 1924-29 average. According to readings from the curve in figure 1, if shipments of canned peaches had been the sole factor, a price of $3.56 per case for canned clingstone peaches would have been expected in that year. The actual price was $2.69 per case. By taking account of the index of income of 72 per cent, an estimate of a price of $2.56 per case is obtained (72 per cent of $3.56 is $2.56).

A comparison of the prices of canned clingstone peaches estimated from shipments of canned peaches and an index of national income, excluding agricultural income with the actual prices, is shown graphically in figure 4.

Effect of the Prices of Canned Fruits Competing with Canned Peaches Upon the Prices of Canned Clingstone Peaches.-- To a certain extent, one canned fruit can be substituted for another by the consumer. If the price of canned clingstone peaches is high relative to the prices of canned pears, canned apricots, and canned pineapples -- the main competitive canned fruits -- a certain amount of substitution takes place which reacts upon the prices which can be obtained for a given quantity of canned peaches.

An index of the prices of canned fruits competing with canned peaches, designed for use in measuring the influence of this factor upon canned-clingstone-peach prices, has been constructed. The methods used in the construction of this index are indicated in table 5. The weighting factors of 3 for pears, 2 for apricots, and 6 for pineapples were determined from estimates of the aggregate values of these products during the 1924-29 period. Adjustments were made in the index for the influence of changes in the levels of consumer incomes, a factor already included in the analysis. The index as used in measuring the effect of the prices of canned fruits competing with canned peaches upon the prices of

canned clingstone peaches is given in column 9 of table 5.

The relation of the index of the prices of competing canned fruits to the prices of canned clingstone peaches has been measured by taking the portions of the canned-clingstone-peach prices which were unaccounted for by the relationships with shipments of canned peaches and an index of national income, and relating these to the competing-canned-fruit-price index (table 6 and figure 5). For example, as indicated above, the actual price of canned clingstone peaches in 1934-35 was $2.69 per case. An estimate of this price based solely upon shipments of canned peaches amounted to $3.56 per case. Account being taken of consumer incomes as an additional factor, the estimate became $2.56 per case. The unexplained portion of the price of $0.13 per case still remaining ($2.69 minus $2.56) was, as shown in table 6 and figure 5, completely accounted for by the prices of competing canned fruits which, in that particular year, were relatively high.

A comparison of the prices of canned clingstone peaches estimated from shipments of canned peaches, an index of national income excluding agricultural income, and an index of the prices of competing canned fruits with the actual prices is shown graphically in figure 6.

Use of the Results of this Analysis.-- As indicated earlier in this report, this analysis has been made for the purpose of providing some basis for estimating the probable quantities of canned peaches which might be sold during a given season at various prices and with various assumed demand conditions.

The curves plotted in figure 7 and the readings from these curves, given in tables 7 and 8, are presented for the purpose of illustrating the proper use of the results of this analysis. If, for example, one should assume that during a particular season demand conditions would approximate those of the 1935-36 season, an estimate of the price which might be expected for shipments of 8,000,000 cases would be $2.98 (see either table 7 or figure 7). Under similar conditions, shipments of 12,000,000 cases might be expected to sell for around $2.43. Considering the problem from the point of view of estimating the quantities of canned peaches which might be sold at a price of, let us say, $2.60 per case, one would, from readings in table 8 or figure 7, estimate that under conditions similar to those of the 1934-35 season, 10,500,000 cases could be sold.

Assuming demand conditions in the neighborhood of those prevailing in 1935-36, an increase in shipments of canned peaches from 9,000,000 to 10,000,000, or from 10,000,000 to 11,000,000, may be expected to result in lower prices for canned clingstone peaches to the extent of approximately 14 cents per case. A rise in the index of national income, excluding agricultural income, from 75 to 80, or from 80 to 85, other things remaining the same, may be expected to result in higher prices for canned clingstone peaches of about 18 cents per case. The net effect of the index of competing canned fruit prices is to raise the price of canned clingstone peaches approximately 9 cents per case with each increase of 5 per cent in the index, after account is taken of changes in the index of national income. With the index of national income at the 80 per cent level, a rise of 5 per cent in the adjusted index (adjusted for changes in the index of national income) is equivalent to a rise of 4 per cent in the unadjusted index.

TABLE 1

Pack, Carryover, Shipments, and F.O.B. Prices of Canned Peaches, California, 1924-25 to 1935-36

June through May	Pack, No. 2½ can basis	Carryover from the preceding year	Supply available for shipment	Shipments	Carryover into the following year	F.o.b. prices of canned clingstone peaches
	1	2	3	4	5	6
	thousand cases	thousand cases	thousand cases	thousand cases	thousand cases	dollars per case
1924-25	6,141	1,575	7,716	6,918	798	4.21
1925-26	10,143	798	10,941	10,367	574	3.78
1926-27	14,059	574	14,633	10,727	3,906	3.66
1927-28	10,813	3,906	14,719	13,203	1,516	3.17
1928-29	14,596	1,516	16,112	12,963	3,149	3.22
1929-30	8,100	3,149	11,249	9,572	1,677	4.08
1930-31	13,294	1,677	14,971	11,020	3,951	2.88
1931-32	8,421	3,951	12,372	7,527	4,845	2.55
1932-33	6,438	4,845	11,283	9,922	1,361	1.97
1933-34	10,597	1,361	11,958	9,568	2,390	2.31
1934-35	9,175	2,390	11,565	9,709	1,856	2.69
1935-36	11,216	1,856	13,072	11,030	2,042	2.54

Sources of data:

Cols. 1, 2, 4, and 5: Compiled by the Canners League of California.

Col. 3: Col. 1 plus col. 2.

Col. 6: Compiled from records of canners. Prices are weighted average prices for all grades and sizes of cans, f.o.b. cannery.

These figures are based on reports covering the following numbers of cases:

1924-25:	3,301,369	1930-31:	7,493,990
1925-26:	4,538,515	1931-32:	5,092,590
1926-27:	5,182,672	1932-33:	6,683,598
1927-28:	7,106,925	1933-34:	3,388,857
1928-29:	7,626,416	1934-35:	5,935,382
1929-30:	6,283,813	1935-36:	6,008,467

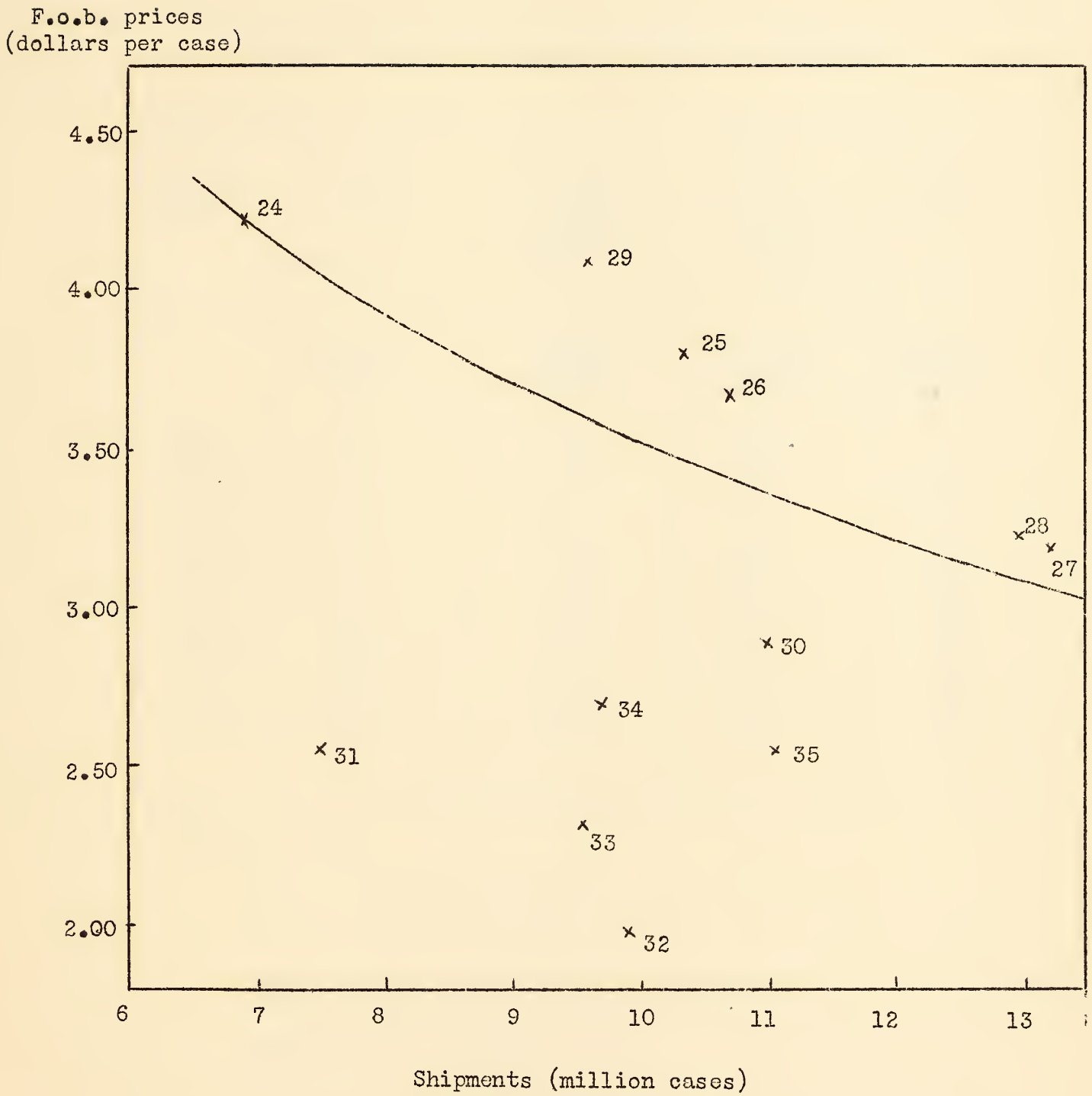


Fig. 1.-- Relation between the f.o.b. prices and shipments of canned peaches, California, 1924-25 to 1935-36. (Data from table 2.)

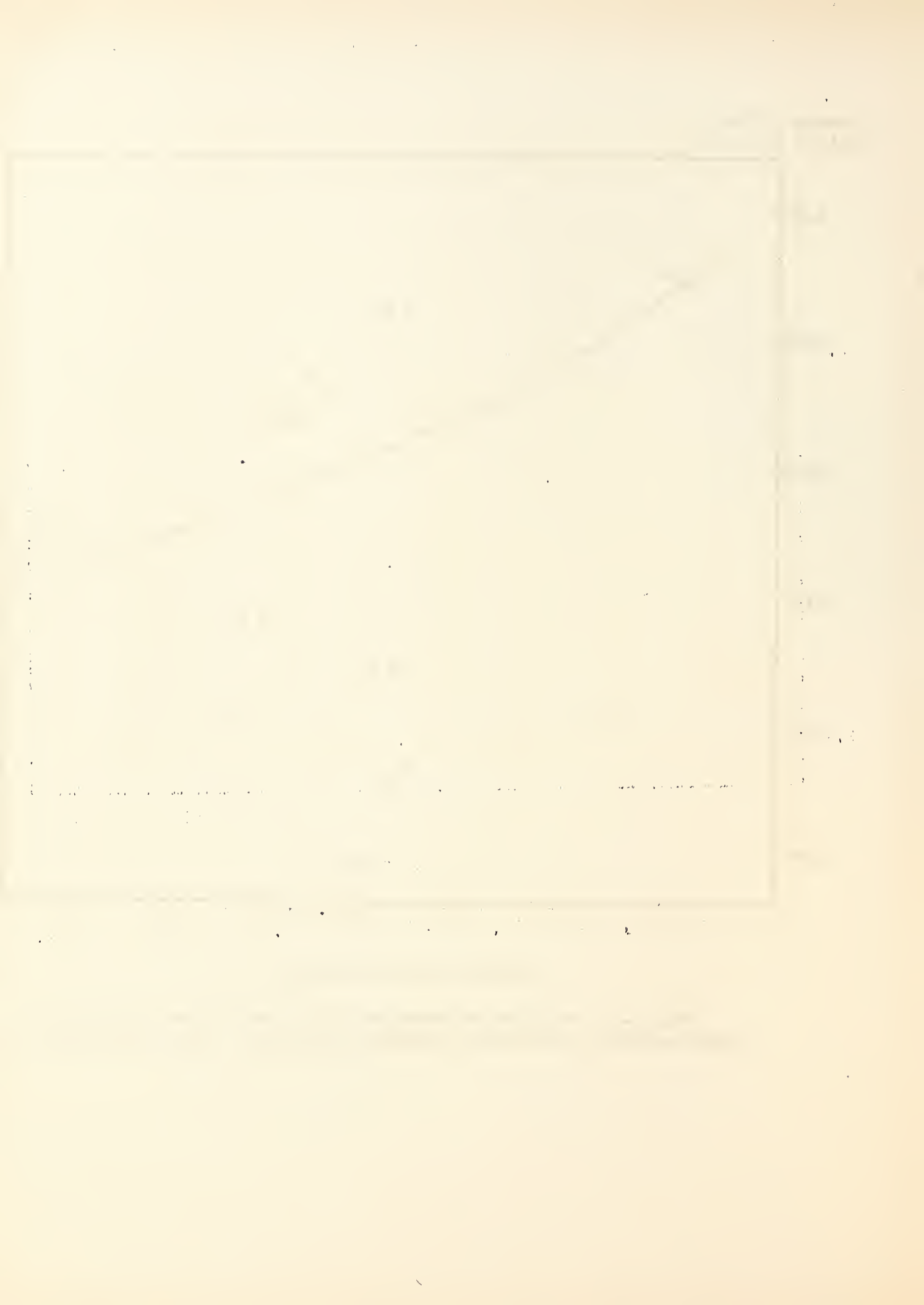


TABLE 2

Relation Between the F.O.B. Prices and Shipments of Canned Peaches, California, 1924-25 to 1935-36

June through May	Shipments of canned peaches	F.o.b. prices of canned clingstone peaches	First estimates of f.o.b. prices	First price residuals
	1	2	3	4
	thousand cases	dollars per case	dollars per case	dollars per case
1924-25	6,918	4.21	4.21	0
1925-26	10,367	3.78	3.45	+0.33
1926-27	10,727	3.66	3.39	+0.27
1927-28	13,203	3.17	3.05	+0.12
1928-29	12,963	3.22	3.07	+0.15
1929-30	9,572	4.08	3.59	+0.49
1930-31	11,020	2.88	3.35	-0.47
1931-32	7,527	2.55	4.05	-1.50
1932-33	9,922	1.97	3.52	-1.55
1933-34	9,568	2.31	3.59	-1.28
1934-35	9,709	2.69	3.56	-0.87
1935-36	11,030	2.54	3.34	-0.80

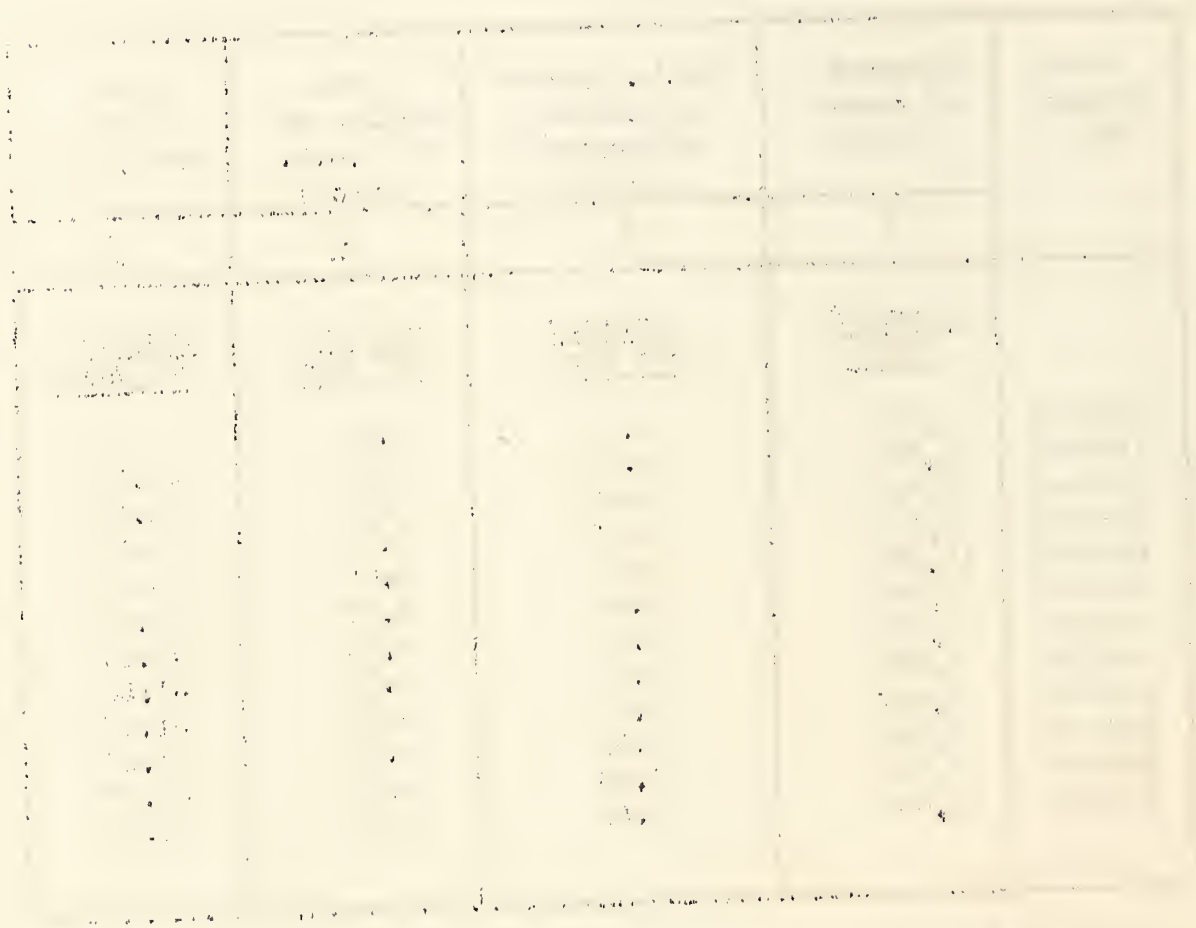
Sources of data:

Col. 1: Table 1, col. 4.

Col. 2: Table 1, col. 6.

Col. 3: Readings from curve in fig. 1.

Col. 4: Col. 2 minus col. 3.



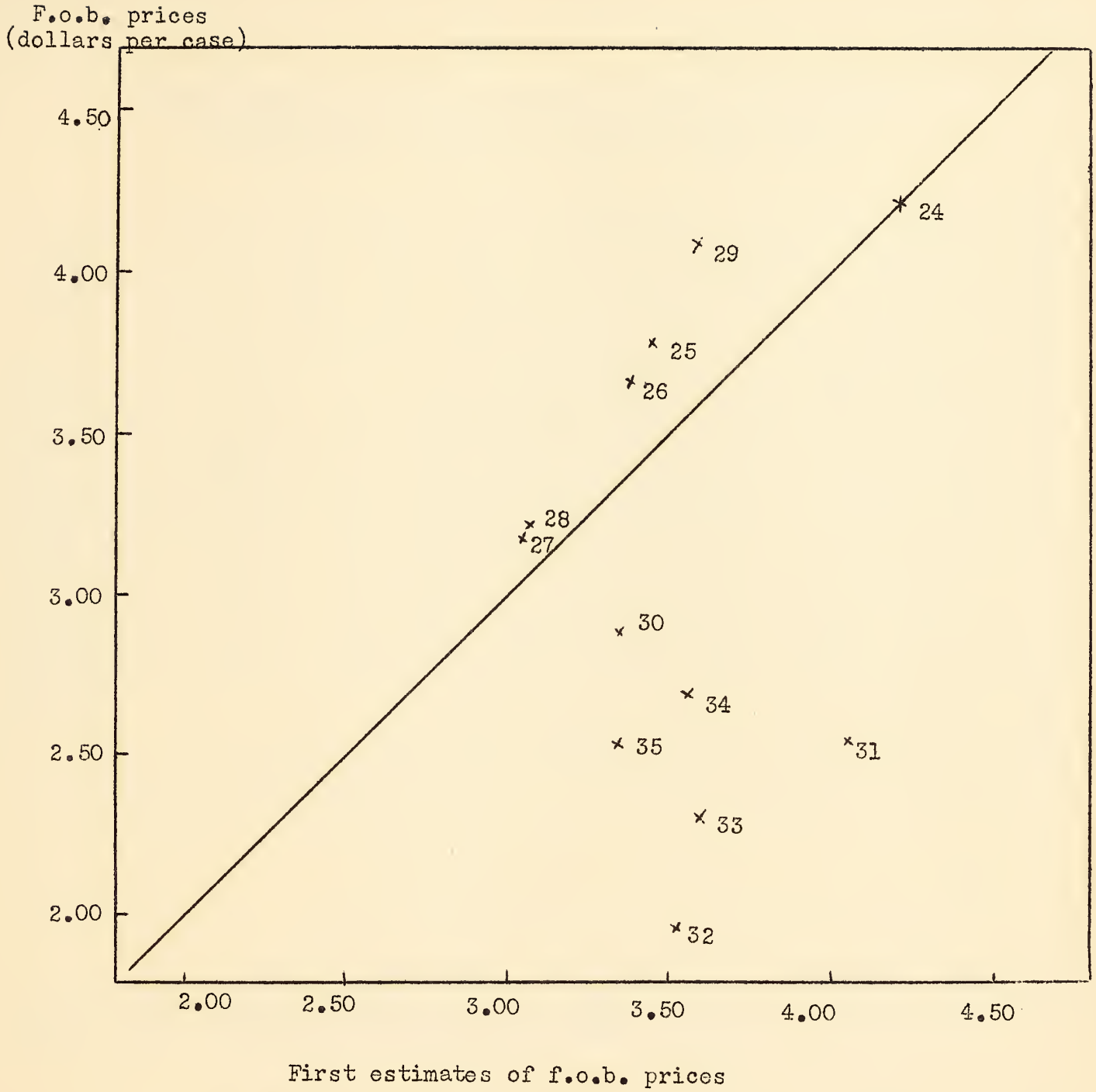


Fig. 2.-- Relation of f.o.b. prices of canned clingstone peaches to estimates of the f.o.b. prices based upon shipments of canned peaches, 1924-25 to 1935-36. (Data from table 2.)

TABLE 3

Monthly Index of National Income, Excluding Agricultural Income, United States, June, 1924 to March, 1936
(Seasonally corrected, 1924-29 equals 100)

June through May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
1924-25	90	89	90	91	91	92	93	94	94	94	94	95	92
1925-26	96	97	97	97	99	100	100	100	100	101	100	98	99
1926-27	100	99	100	101	102	101	101	102	102	102	102	102	101
1927-28	102	102	102	102	100	100	100	102	102	102	102	102	102
1928-29	104	105	106	106	106	106	106	106	106	106	106	107	106
1929-30	108	108	109	109	109	106	107	105	104	105	104	104	107
1930-31	103	100	97	96	96	93	93	92	91	91	90	88	94
1931-32	87	85	83	81	80	79	78	77	75	72	70	68	78
1932-33	66	64	62	62	63	63	62	63	61	58	58	60	62
1933-34	62	62	64	65	65	67	68	71	72	71	70	72	67
1934-35	69	70	70	69	69	71	72	74	76	74	72	74	72
1935-36	74	72	74	76	74	77	80	79	78	82	79		77*
1936-37													

* Preliminary estimate.

Sources of data:

U. S. Dept. Agr. Bur. Agr. Econ. The Agricultural Situation. Figures for June, 1924-February, 1936 from April 1, 1936 issue, p. 5.; March, 1936; May 1, 1936, p. 3; April, 1936; June 1, 1936. p. 16.

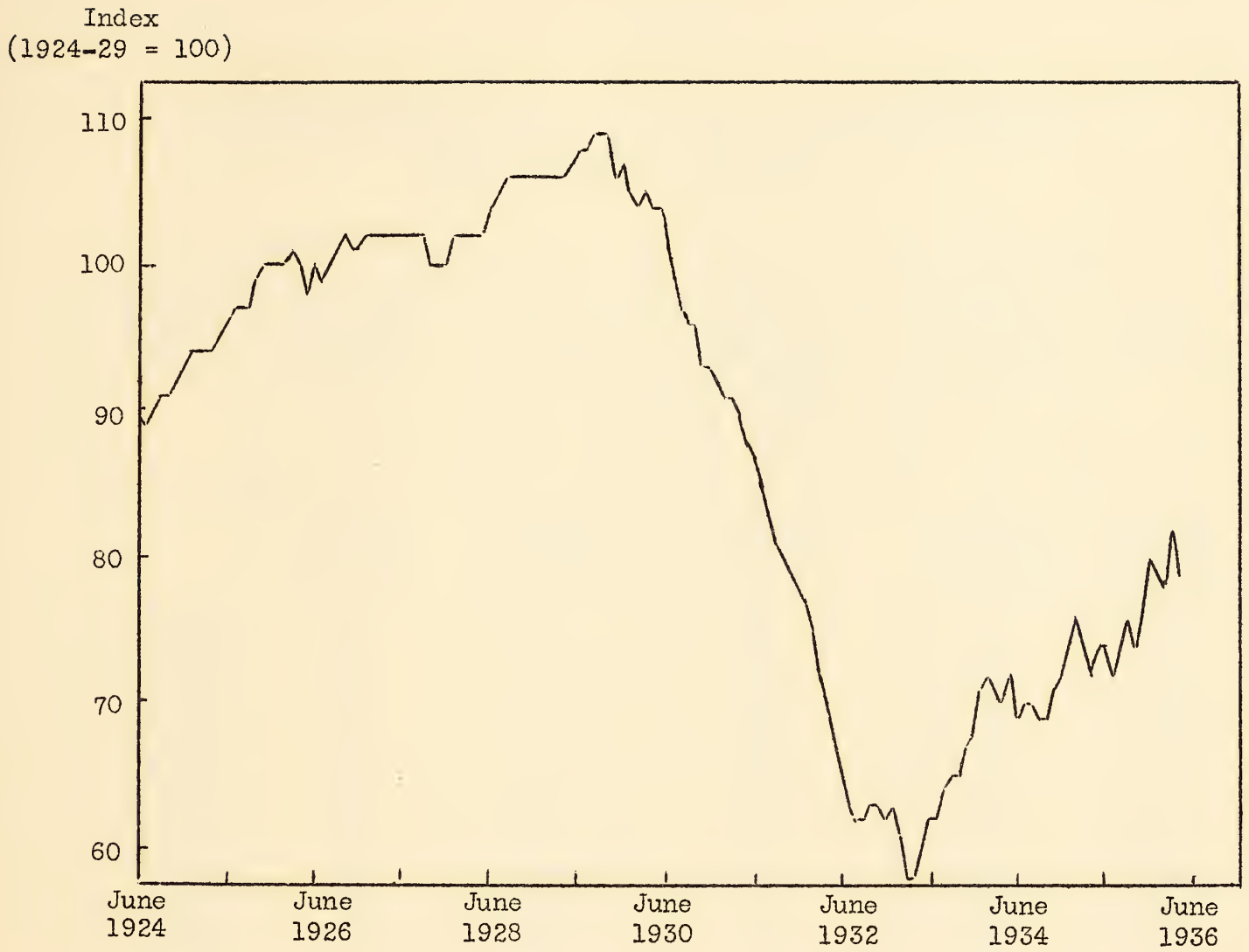


Fig. 3.-- Monthly index of national income, excluding agricultural income, United States, June, 1924 to March, 1936. (Seasonally corrected, 1924-29 equals 100) (Data from table 3.)

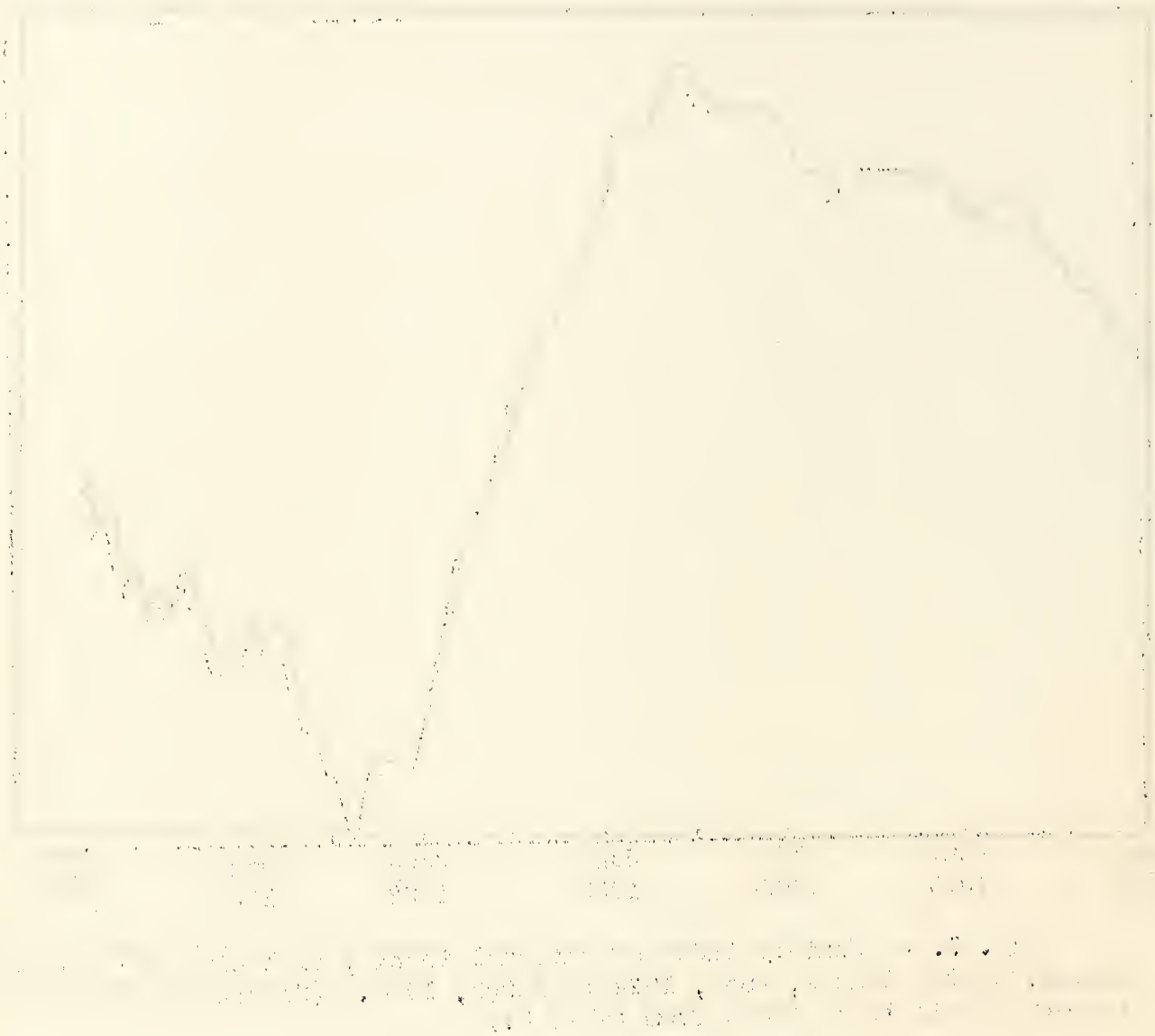


TABLE 4

Relation Between the F.O.B. Prices of Canned Clingstone Peaches and an Index of National Income, Excluding Agricultural Income, 1924-25 to 1935-36

June through May	F.o.b. prices of canned clingstone peaches	First estimates of f.o.b. prices	Index of national income excluding agricultural income	Second estimates of f.o.b. prices	Second price residuals
	1	2	3	4	5
	dollars per case	dollars per case	1924-29 = 100	dollars per case	dollars per case
1924-25	4.21	4.21	92	3.87	+0.34
1925-26	3.78	3.45	99	3.42	+0.36
1926-27	3.66	3.39	101	3.42	+0.24
1927-28	3.17	3.05	102	3.11	+0.06
1928-29	3.22	3.07	106	3.25	-0.03
1929-30	4.08	3.59	107	3.84	+0.24
1930-31	2.88	3.35	94	3.15	-0.27
1931-32	2.55	4.05	78	3.16	-0.61
1932-33	1.97	3.52	62	2.18	-0.21
1933-34	2.31	3.59	67	2.41	-0.10
1934-35	2.69	3.56	72	2.56	+0.13
1935-36	2.54	3.34	77*	2.57	-0.03

* Preliminary estimate.

Sources of data:

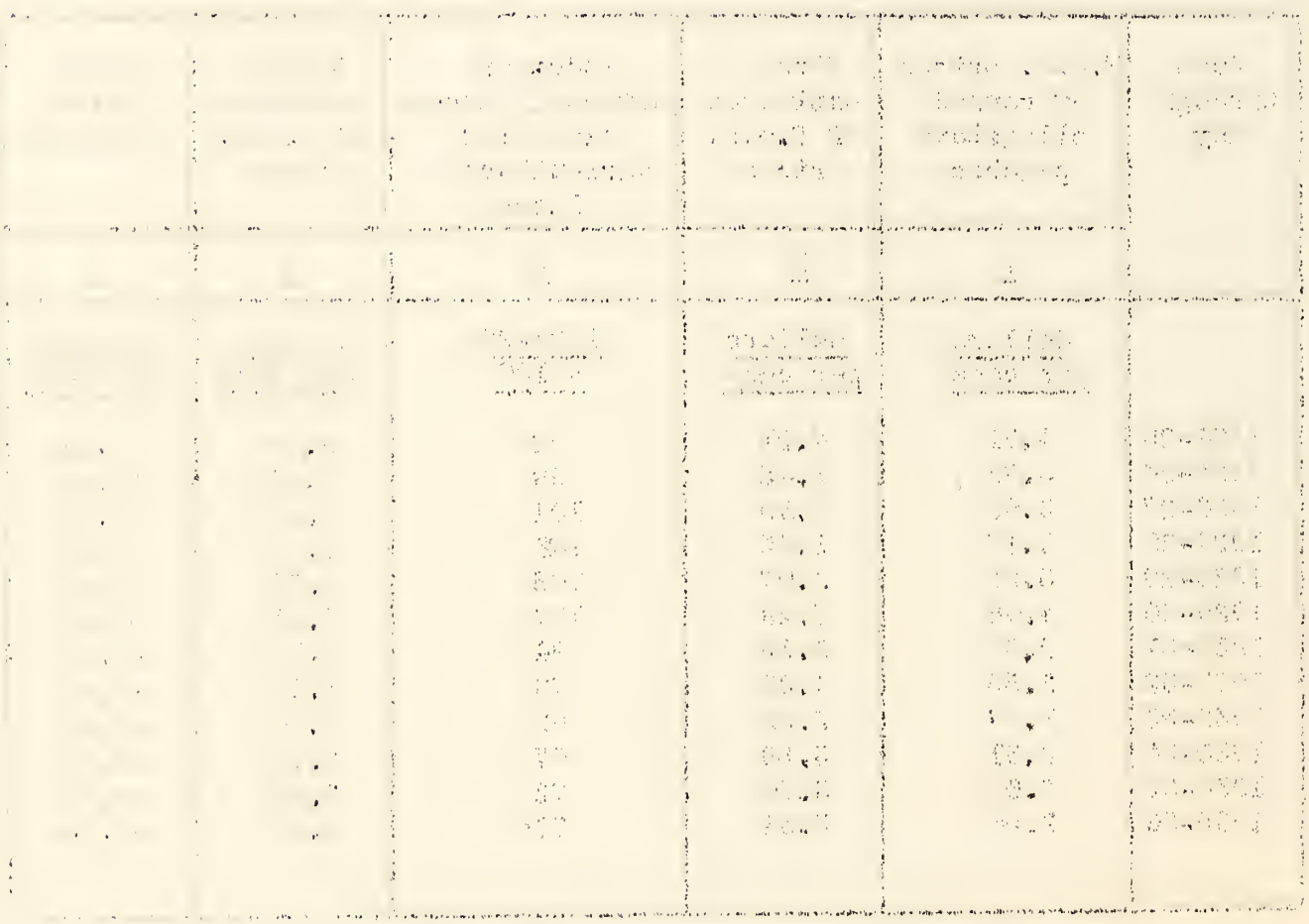
Col. 1: Table 2, col. 2.

Col. 2: Table 2, col. 3.

Col. 3: Table 3.

Col. 4: Col. 2 multiplied by col. 3.

Col. 5: Col. 1 minus col. 4.



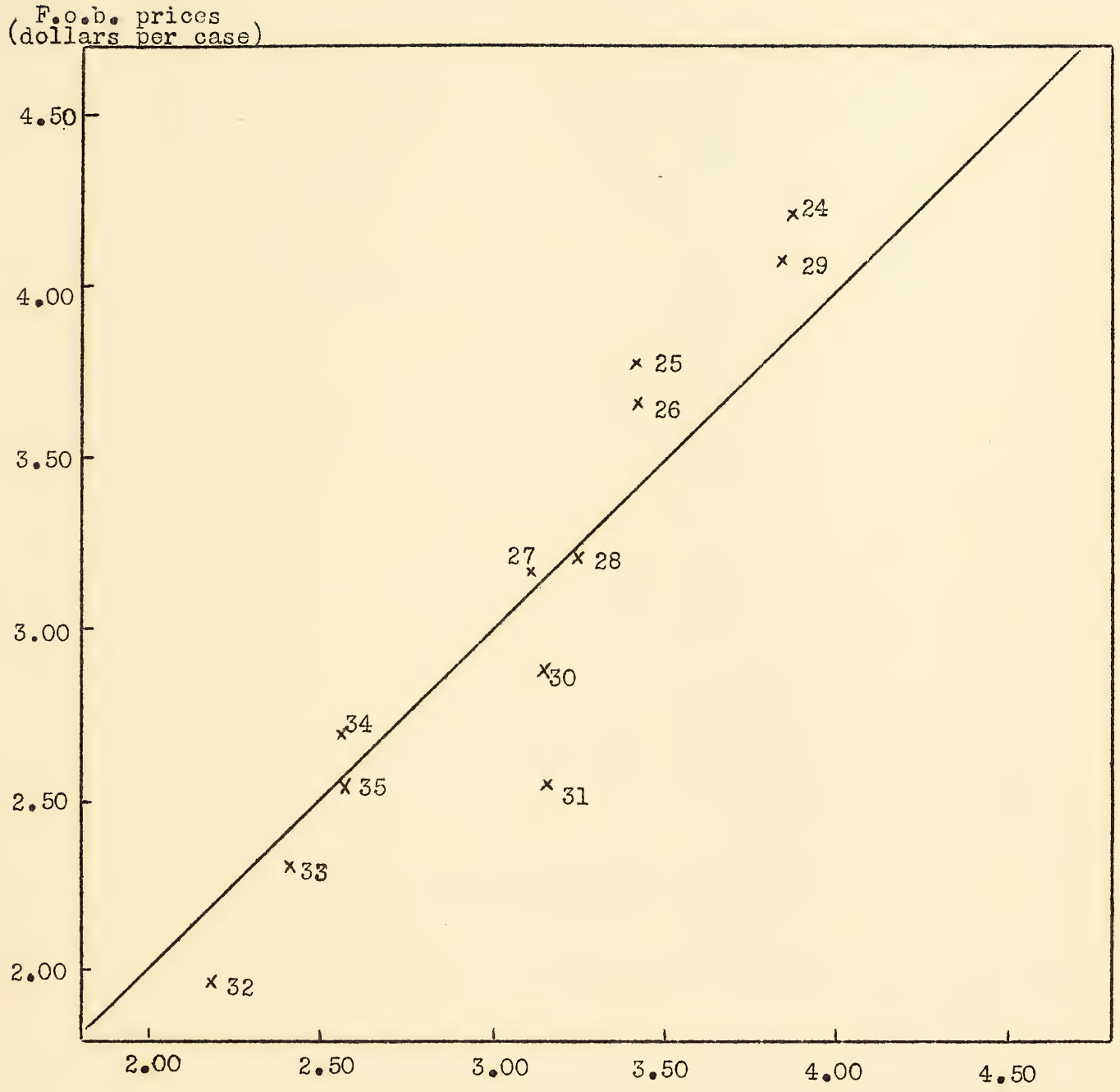


Fig. 4.-- Relation of f.o.b. prices of canned clingstone peaches to estimates of the f.o.b. prices based upon shipments of canned peaches and an index of national income, excluding agricultural income, 1924-25 to 1935-36. (Data from table 4.)

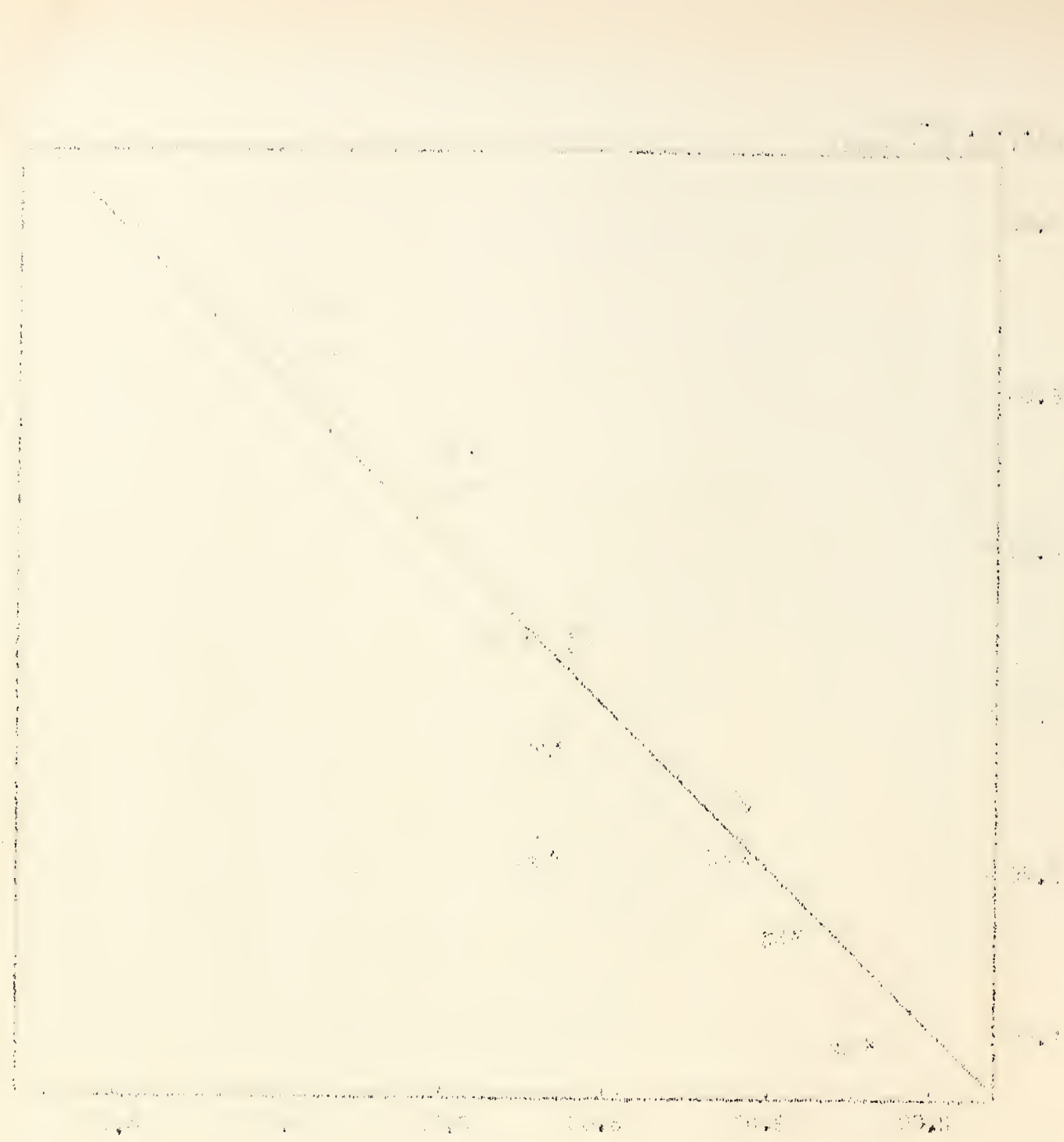


TABLE 5

Method of Constructing an Index of the Prices of Canned Fruits Competing with Canned Peaches, 1924-25 to 1935-36

June through May	Prices			Relatives of prices			Unadjusted index of competing canned-fruit prices	Index of national income excluding agricultural income	Index of the prices of competing canned fruits
	Canned Bartlett pears	Canned apricots	Canned pineapples	Canned Bartlett pears	Canned apricots	Canned pineapples			
	1	2	3	4	5	6	7	8	9
	dollars per case	dollars per case	dollars per dozen cans	1924-29 = 100	1924-29 = 100	1924-29 = 100	1924-29 = 100	1924-29 = 100	1924-29 = 100
1924-25	5.40	3.91	2.60	113	102	114	112	92	122
1925-26	5.44	3.72	2.15	114	97	94	100	99	101
1926-27	4.31	3.85	2.35	90	100	103	99	101	98
1927-28	4.60	3.97	2.10	96	103	92	95	102	93
1928-29	4.13	3.67	2.20	86	95	96	93	106	88
1929-30	4.82	3.97	2.35	101	103	103	102	107	95
1930-31	3.53	3.32	2.10	74	86	92	86	94	91
1931-32	2.82	2.64	1.50*	59	69	66	65	78	83
1932-33	2.48	2.23	1.60	52	58	70	63	62	102
1933-34	2.64	2.37	1.80	55	62	79	69	67	103
1934-35	3.06 †	3.47	1.80	64	90	79	77	72	107
1935-36	2.95 †	2.93	1.80	62	76	79	74	77 †	96 †

* Opening price, $1.75; account taken of break in prices during season.

† Preliminary estimate.

Sources of data:

Cols. 1 and 2: Compiled from records of canners. Prices are weighted average prices for all grades and sizes of cans, f.o.b. cannery. Canned Bartlett pear prices are for the Pacific Coast; canned apricot prices, for California.

Col. 3: Opening prices for No. 2½ Sliced Fancy pineapple, Hawaii, as given in Western Canner and Packer, April 25, 1936. p. 75.

Cols. 4, 5, and 6: Prices given in cols. 1, 2, and 3 in per cent of their 1924-29 averages.

(Sources continued on next page.)

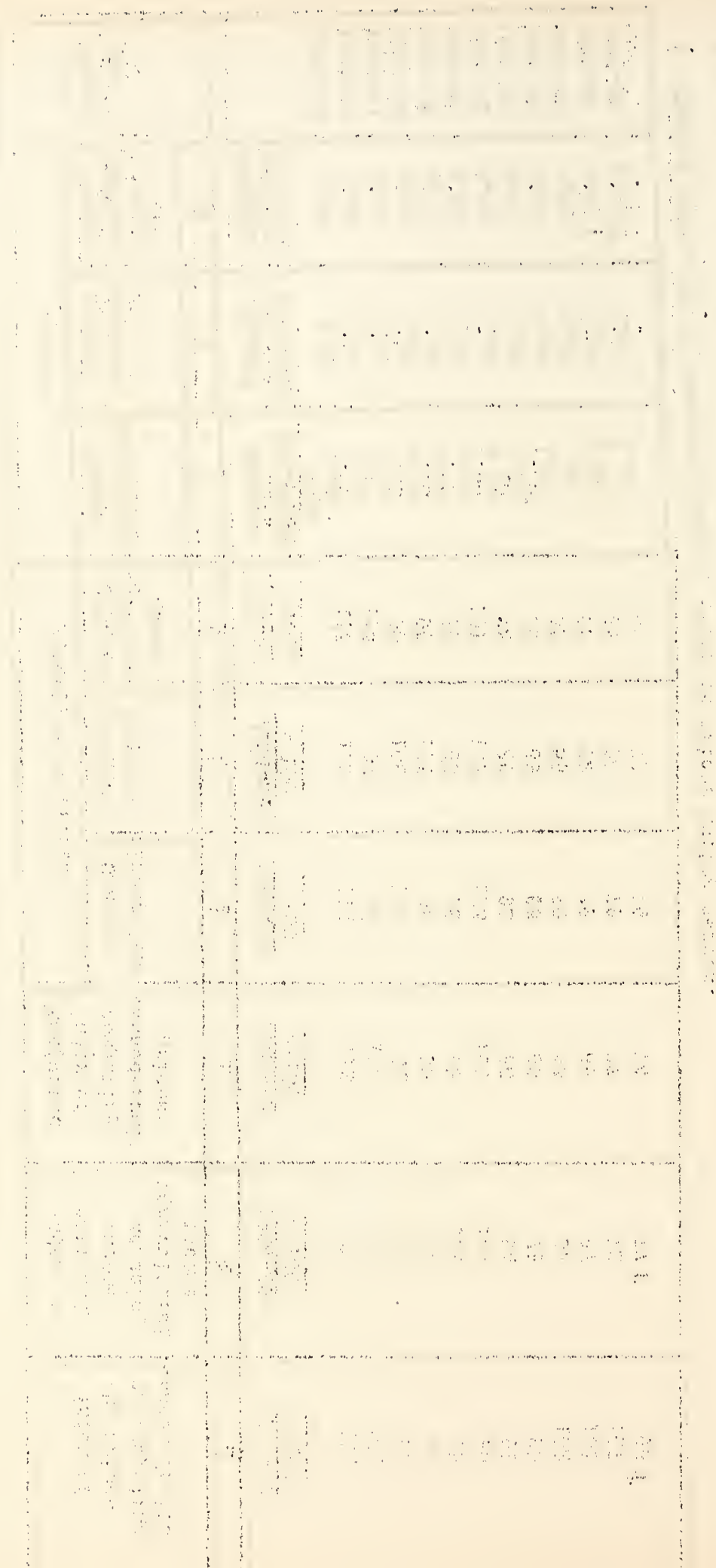


Table 5 continued

Col. 7: Weighted combination of relatives given in cols. 4, 5, and 6, using following weights: canned Bartlett pears, 3; canned apricots, 2; and canned pineapples, 6.

Col. 8: Table 3.

Col. 9: Col. 7 divided by col. 8.

TABLE 6

Relation Between the F.O.B. Prices of Canned Clingstone Peaches and an Index of the Prices of Competing Canned Fruits, 1924-25 to 1935-36

June through May	Index of prices of competing canned fruits	Second price residuals	Second price residual estimates	Third price residuals	F.o.b. prices of canned clingstone peaches	Third estimates of f.o.b. prices
	1	2	3	4	5	6
	1924-29 = 100	dollars per case	dollars per case	dollars per case	dollars per case	dollars per case
1924-25	122	+0.34	+0.40	-0.06	4.21	4.27
1925-26	101	+0.36	+0.02	+0.34	3.78	3.44
1926-27	98	+0.24	-0.04	+0.28	3.66	3.38
1927-28	93	+0.06	-0.13	+0.19	3.17	2.98
1928-29	88	-0.03	-0.22	+0.19	3.22	3.03
1929-30	95	+0.24	-0.10	+0.34	4.08	3.74
1930-31	91	-0.27	-0.17	-0.10	2.88	2.98
1931-32	83	-0.61	-0.32	-0.29	2.55	2.84
1932-33	102	-0.21	+0.03	-0.24	1.97	2.21
1933-34	103	-0.10	+0.05	-0.15	2.31	2.46
1934-35	107	+0.13	+0.13	0	2.69	2.69
1935-36	96	-0.03	-0.07	+0.04	2.54	2.50

Sources of data:

Col. 1: Table 5, col. 9.

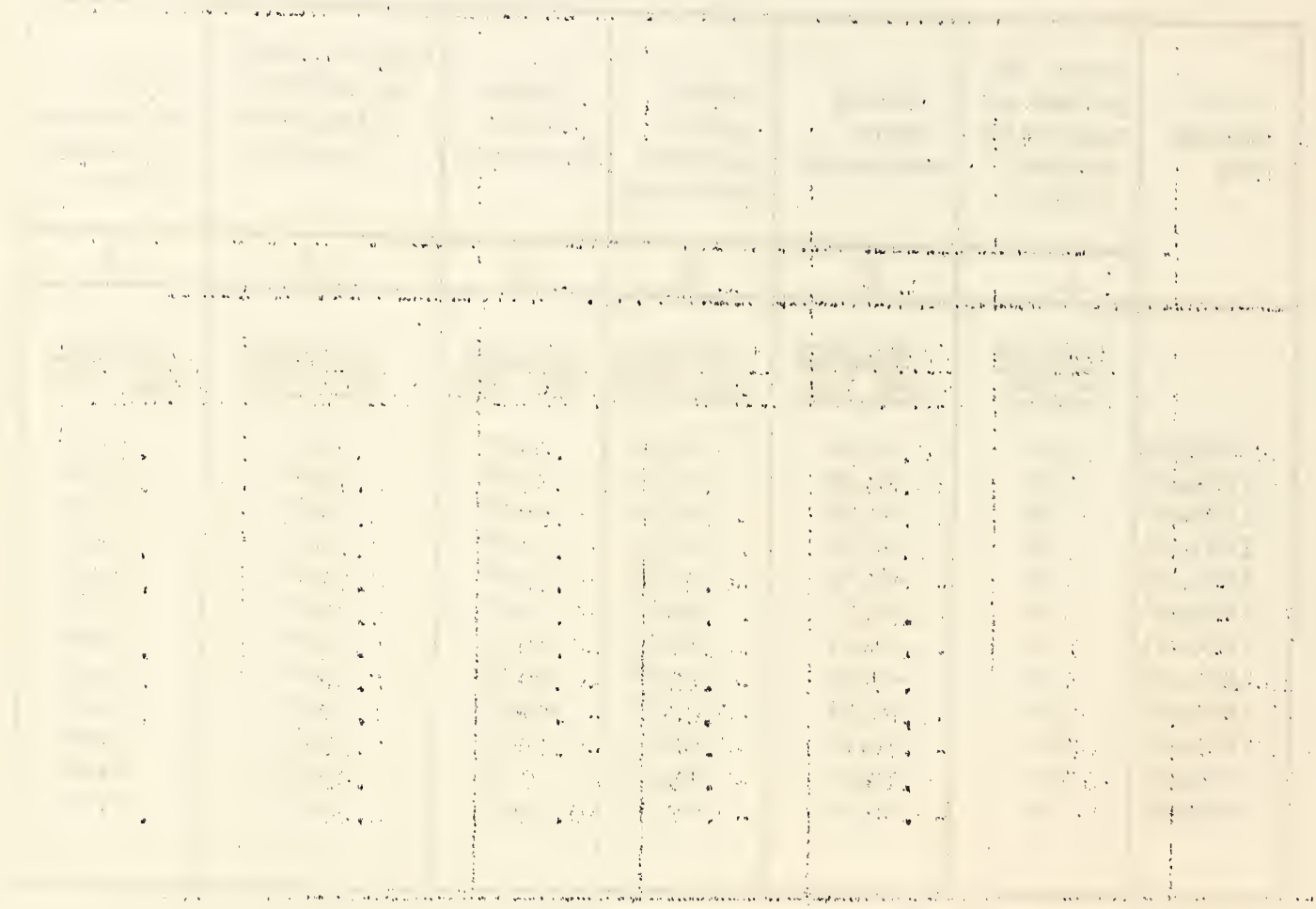
Col. 2: Table 4, col. 5.

Col. 3: Readings from line in fig. 5.

Col. 4: Col. 2 minus col. 3.

Col. 5: Table 2, col. 2.

Col. 6: Col. 5 minus col. 4.



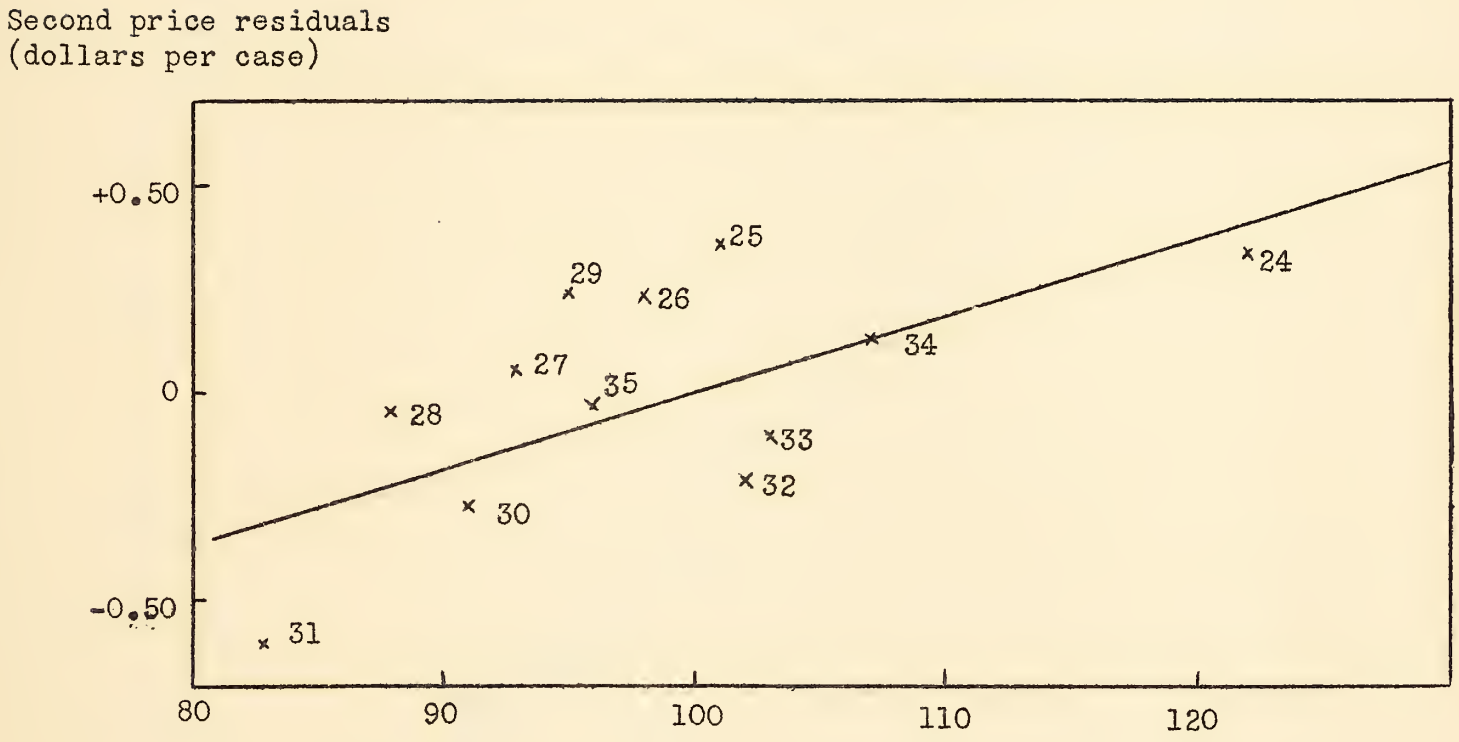
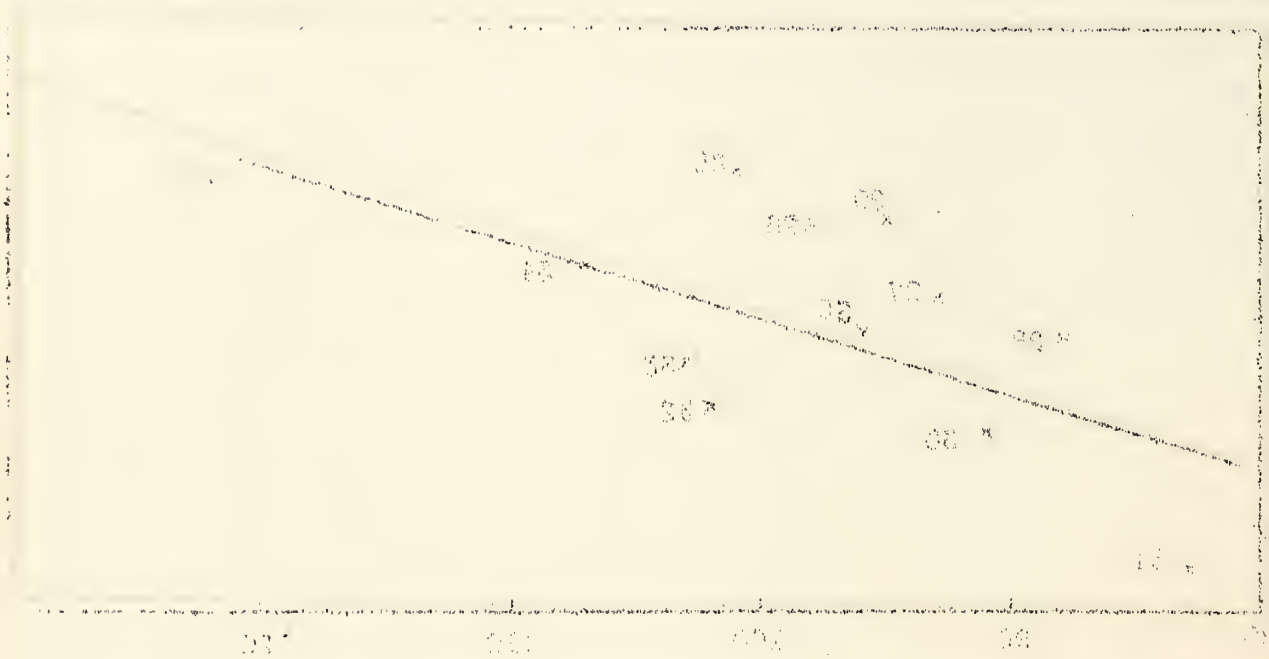


Fig. 5.-- Relation between the variations in the f.o.b. prices of canned peaches unaccounted for in figure 4 and an index of the prices of competing canned fruits, 1924-25 to 1935-36. (Data from table 6.)



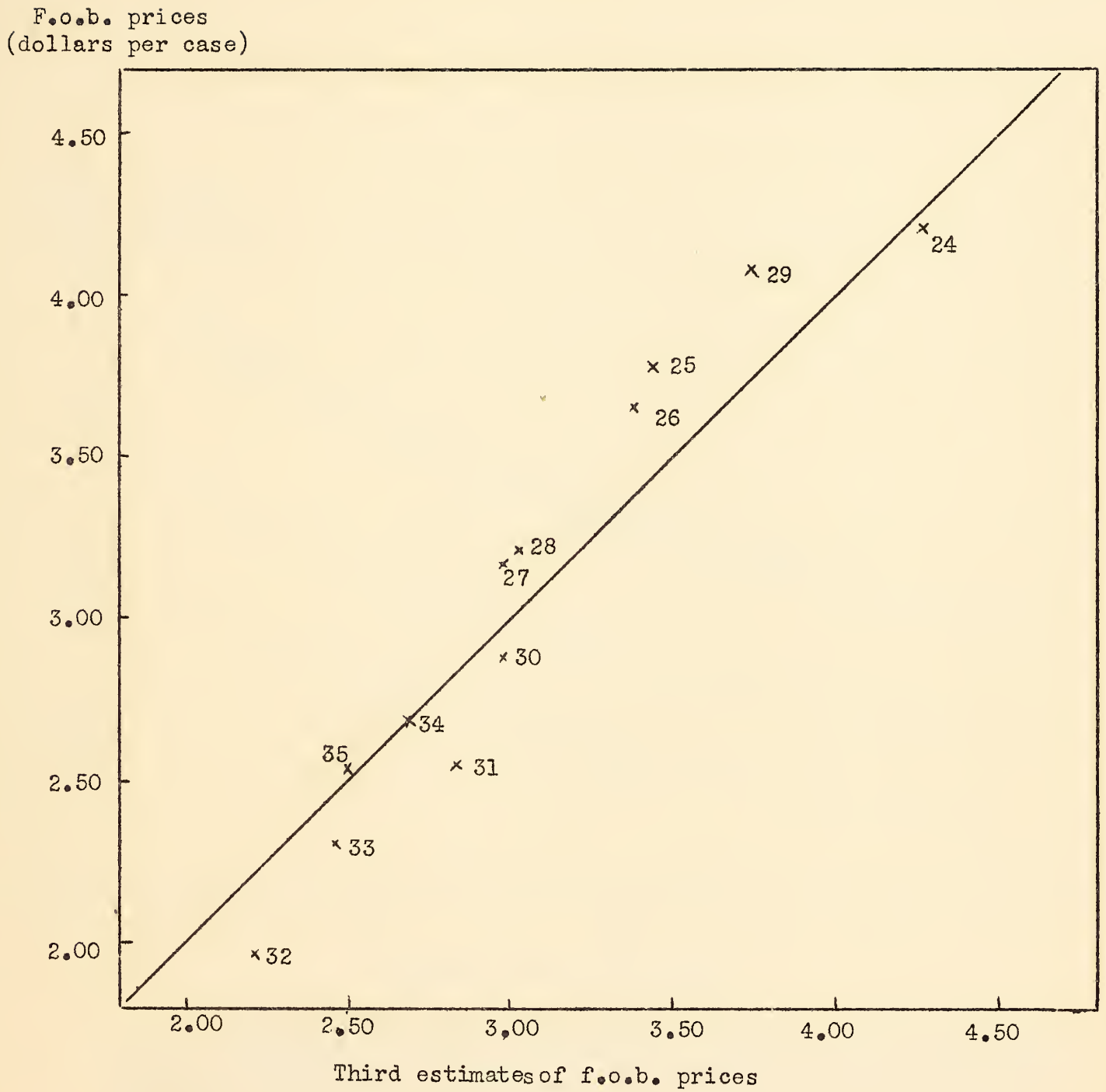
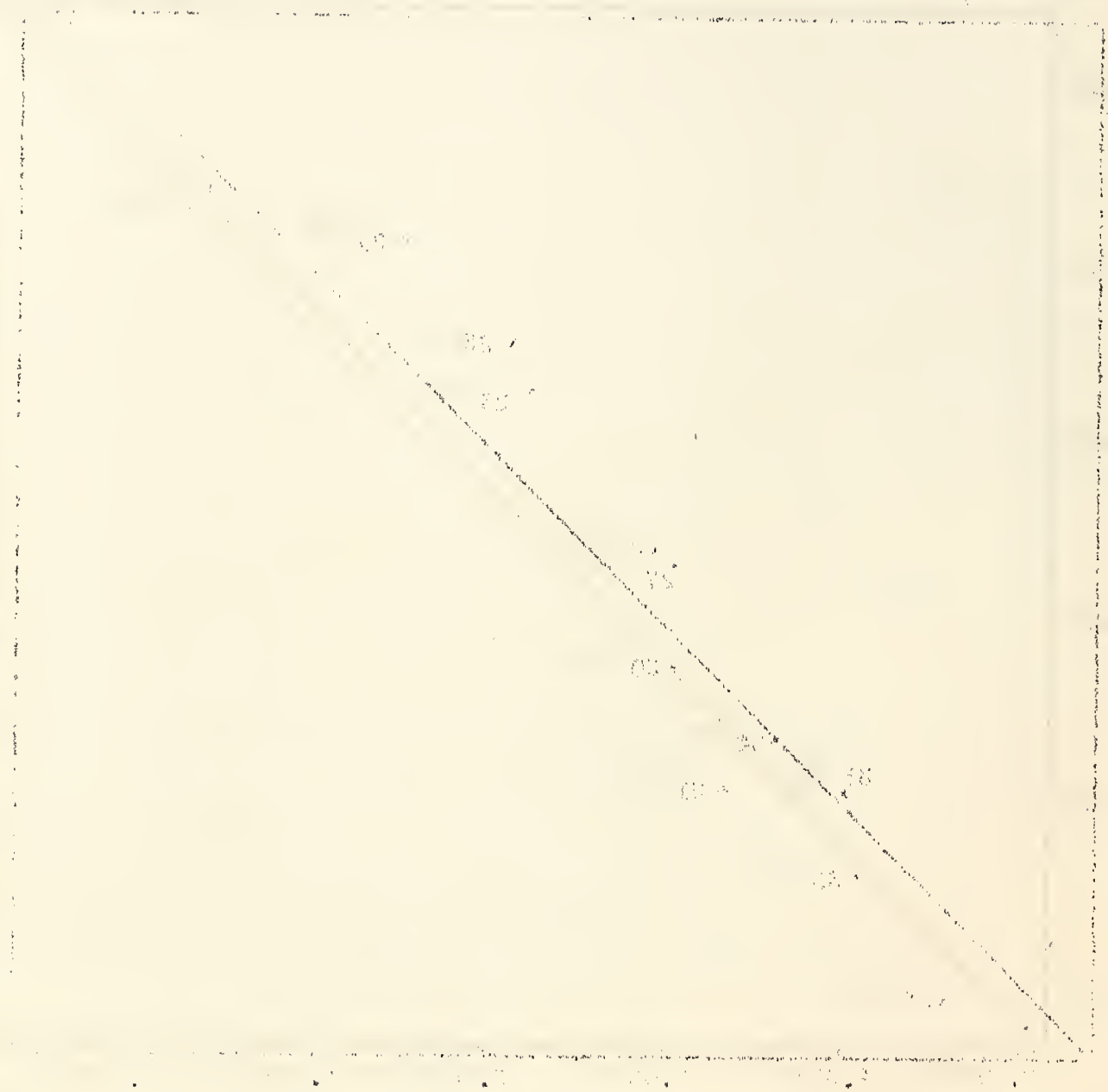


Fig. 6.-- Relation of f.o.b. prices of canned clingstone peaches to estimates of the f.o.b. prices based upon shipments of canned peaches, an index of national income, excluding agricultural income, and an index of the prices of competing canned fruits, 1924-25 to 1935-36. (Data from table 6.)



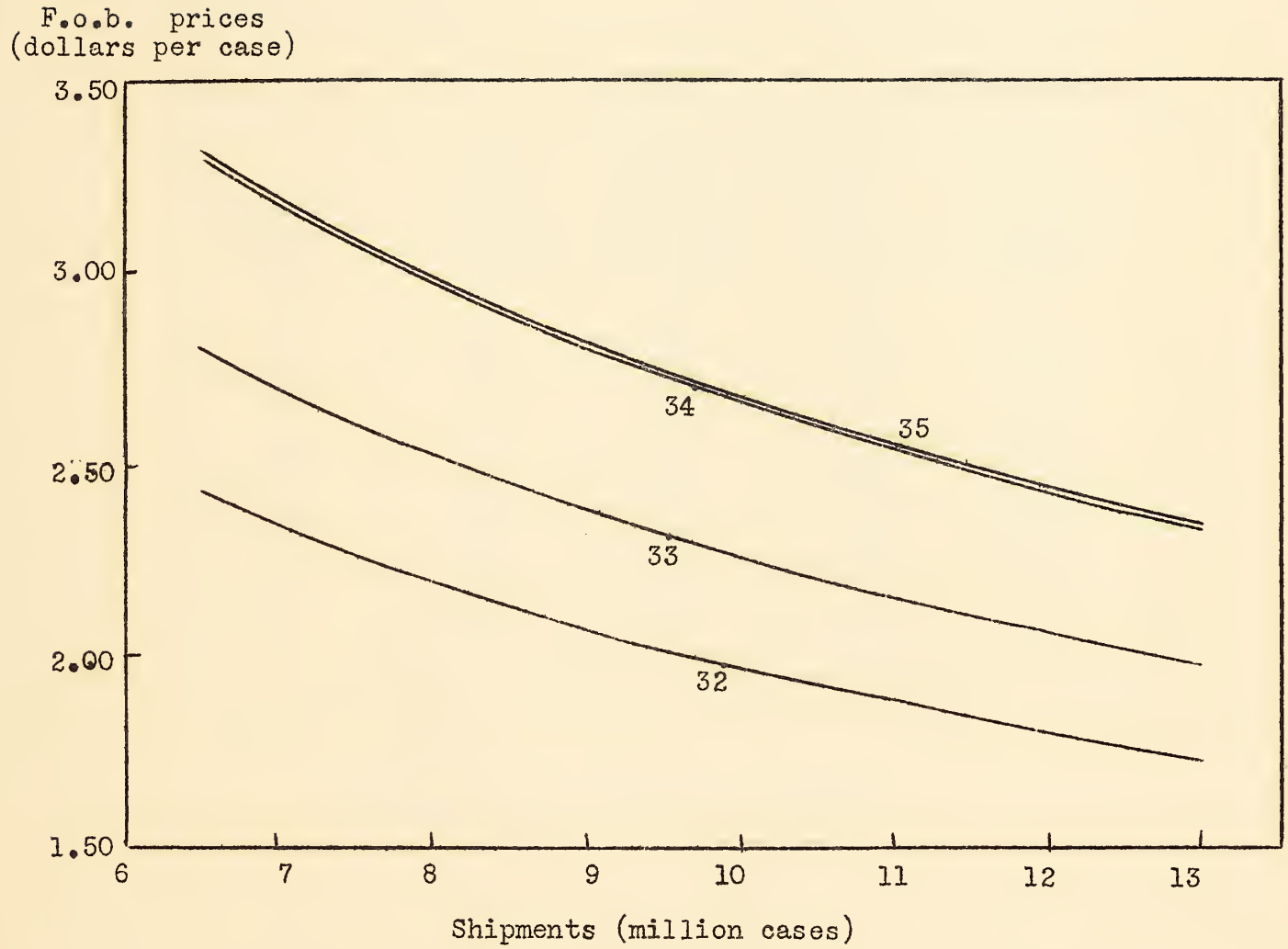


Fig. 7.-- F.o.b. prices of canned clingstone peaches which might be expected for various quantities of canned peaches with demand conditions similar to those during the 1932-33, 1933-34, 1934-35, and 1935-36 seasons. (For readings from this chart, see tables 7 and 8.)

TABLE 7

Prices Which Might Be Expected for Various Quantities of Canned Peaches with Various Demand Conditions

Shipments	Prices which might be expected with demand conditions similar to those present during the			
	1932-33 season	1933-34 season	1934-35 season	1935-36 season
million cases	dollars per case	dollars per case	dollars per case	dollars per case
7.0	2.34	2.69	3.17	3.19
7.5	2.26	2.60	3.06	3.08
8.0	2.19	2.52	2.96	2.98
8.5	2.12	2.45	2.87	2.89
9.0	2.06	2.38	2.80	2.82
9.5	2.01	2.32	2.72	2.74
10.0	1.96	2.26	2.65	2.67
10.5	1.92	2.20	2.59	2.61
11.0	1.87	2.15	2.53	2.55
11.5	1.83	2.10	2.47	2.49
12.0	1.79	2.06	2.41	2.43

Source of data:

Readings from the curves in fig. 7.

TABLE 8

Quantities of Canned Peaches Which Might be Sold at Various Prices with Various Demand Conditions

F.o.b. prices	Quantities which might be sold with demand conditions similar to those present during the			
	1932-33 season	1933-34 season	1934-35 season	1935-36 season
dollars per case	million cases	million cases	million cases	million cases
2.40	6.6	8.8	12.1	12.2
2.45	--	8.5	11.7	11.8
2.50	--	8.2	11.3	11.4
2.55	--	7.9	10.9	11.0
2.60	--	7.6	10.5	10.6
2.65	--	7.3	10.1	10.2
2.70	--	7.0	9.7	9.8
2.75	--	6.7	9.3	9.4
2.80	--	6.5	8.9	9.0
2.85	--	--	8.6	8.7
2.90	--	--	8.3	8.4

Source of data:

Readings from the curves in fig. 7.